

REMARKS

Accompanying Information Disclosure Statement

This Preliminary Response is being co-filed with a Request for Continued Examination and an Information Disclosure Statement that includes office actions and cited references from co-pending Application Serial No. 10/638,145. Application Serial No. 10/638,145 itself is already of record.

Rejections under 35 U.S.C. § 112, First Paragraph

Claims 1, 4, 5, 7, 8, 10, 11, 15-19, 21, and 22 stand rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. 4/4/06 Office Action, page 2, paragraph no. 6. Specifically, the Office Action states,

Claims 1, 19, and 21 introduce the newly added limitation, “a protective layer comprising the plasma decomposition product of an oxidant and a reactant gas selected from organometallic compounds”, that has no support in the specification as originally presented. Although the specification does disclose a protective layer as described to US Pat 6,110,544 to Yang et al. and US Pat 6,379,757 to Iacovangelo, it does not disclose a protective layer incorporated by reference or that the protective layer comprising the plasma decomposition product as recited in the instantly amended claims.

4/4/06 Office Action, paragraph bridging pages 2 and 3 (emphasis added). Applicants respectfully disagree.

First, Applicants’ specification as filed includes a global incorporation by reference statement in paragraph [0072]: “All cited patents, patent applications, and other references are incorporated herein by reference in their entirety.” So, the disclosures of U.S. Patent Nos. 6,110,544 to Yang et al. (“Yang”) and 6,379,757 to Iacovangelo, which are cited in paragraph [0053], are incorporated by reference into the instant application.

Second, the disclosure of Yang provides support for the limitations added to Applicants’ claims 1, 19, and 21. Those limitations are reproduced below.

claim 1: “a protective layer comprising the plasma decomposition product of an oxidant and a reactant gas selected from silanes, disilanes, and organosilicon compounds; wherein the reflective layer is interposed between the haze-prevention layer and the protective layer; and wherein the protective layer is in contact with the reflective metal layer”

claim 19: “a protective layer comprising the plasma decomposition product of an oxidant and a reactant gas selected from silanes, disilanes, and organosilicon compounds; wherein the reflective layer is interposed between the haze-prevention layer and the protective layer; and wherein the protective layer is in contact with the reflective metal layer”

claim 21: “applying a protective layer to a surface of the reflective metal layer; wherein the protective layer comprises the plasma decomposition product of an oxidant and a reactant gas selected from silanes, disilanes, and organosilicon compounds; and wherein the reflective layer is interposed between the haze-prevention layer and the protective layer”

Support for the limitation that the protective layer comprises the plasma decomposition product of an oxidant and a reactant gas may be found in Yang claim 1.

1. A method for depositing an adherent coating onto the surface of a substrate by plasma deposition which comprises passing a plasma gas through a direct current arc plasma generator to form a plasma, injecting a reactant gas and an oxidant into a diverging nozzle-injector extending from the plasma generator into a vacuum chamber towards the substrate which is positioned in the vacuum chamber, whereby reactive species formed by the plasma from the oxidant and reactant gas contact the surface of the substrate for a period of time sufficient to form the adherent coating.

Yang claim 1 (emphasis added). Support for the limitation reciting the specific reactant gases may be found in Yang claim 7.

7. A method according to claim 1 in which the reactant gas is selected from the group consisting of silanes, disilanes, and organosilicon compounds.

Yang claim 7 (emphasis added).

Thus, there is support in the application as filed for both the limitations that were incorrectly characterized by the office action as lacking support. Accordingly,

Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1, 4, 5, 7, 8, 10, 11, 15-19, 21, and 22 under 35 U.S.C. § 112, first paragraph.

Nonstatutory Double Patenting Rejection Over Iacovangelo '032

Claims 1, 4, 5, 7, 8, 10, 11, and 15-18 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-38 of U.S. Patent No. 6,420,032 to Iacovangelo ("Iacovangelo '032"). 4/4/06 Office Action, page 3, paragraph no. 8. Specifically, the Office Action states,

independent claims 1, 17, and 35 of the patent disclose the transparent metal oxide layer, whereas instant claims 1, 19, and 21 disclose a haze prevention layer. Thus, the scope of the claims of the patent overlaps that of the instant claims, rendering them obvious.

4/4/06 Office Action, page 4, first paragraph (emphasis added). Applicants respectfully traverse this rejection.

Applicants respectfully assert that their haze-prevention layers are patentably distinct from the transparent metal oxide layer of Iacovangelo '032 because the reference does not teach a layered structure in which layers have the same compositional and positional limitations as the layers of Applicants' rejected claims. The three independent claims of Iacovangelo '032, claims 1, 17, and 35, are reproduced below.

1. A multilayer structure, comprising: a polymeric substrate; a transparent metal layer on the substrate; and a transparent metal oxide layer including at least one compound selected from the group consisting of ZnO, indium doped zinc oxide, and aluminum doped zinc oxide, wherein the metal oxide layer is in direct contact with the metal layer, and the adhesion strength between the metal oxide layer and the substrate is a) 2.07 MPa or greater; and b) decreases by no more than 10% after being submerged for 4 days in distilled water at 65 degrees C.

17. A method of coating a polymeric substrate, comprising the steps of: forming a transparent metal layer over the substrate; and forming a transparent metal oxide layer including at least one compound selected from the group consisting of ZnO, indium doped zinc oxide, and aluminum doped zinc oxide, wherein the metal oxide layer is in direct contact with the metal layer, and the adhesion strength between the metal oxide layer and the substrate is a) 2.07 MPa or greater; and b) decreases

by no more than 10% after being submerged for 4 days in distilled water at 65 degrees C.

35. A transparent window usable in a vehicle, a building, a display device or an apparatus, comprising a polycarbonate, polyester carbonate, polyethersulfone or polyetherimide substrate; an infrared radiation reflection layer comprising aluminum or silver; and an ultraviolet radiation absorption layer including at least one compound selected from the group consisting of ZnO, indium doped zinc oxide, and aluminum doped zinc oxide, wherein the ultraviolet radiation absorption layer is in direct contact with the infrared radiation reflection layer, and the adhesion strength between the ultraviolet radiation absorption layer and the substrate is a) 2.07 MPa or greater; and b) decreases by no more than 10% after being submerged for 4 days in distilled water at 65 degrees C.

Iacovangelo '032, claims 1, 17, 35 (emphasis added). Thus, Iacovangelo's ultraviolet radiation absorbing, transparent metal oxide layer consistently includes at least one of zinc oxide (ZnO), indium doped zinc oxide, and aluminum doped zinc oxide. In contrast, Applicants' haze-prevention layers of independent claims 1, 19, and 21 comprise "a plasma-polymerized organosilicone". Therefore, contrary to the examiner's assertion, there is no compositional overlap between Applicants' haze-prevention layer and the metal oxide layer of Iacovangelo '032. Accordingly, Applicants' independent claims 1, 19, and 21 are patentable over the claims of Iacovangelo '032.

Given that claims 4, 5, 7, 8, 10, 11, and 15-18 each ultimately depend from claim 1, they, too, are patentable over claims 1-38 of Iacovangelo '032. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 1, 4, 5, 7, 8, 10, 11, 15-18 under the judicially created doctrine of obviousness-type double patenting over claims 1-38 of Iacovangelo '032.

Claim Rejection Under 35 U.S.C. § 102(e) Over Iacovangelo '032

Claims 1, 7, 8, 10, 11, 16, 17, 19, 21, and 22 are rejected under 35 U.S.C. § 102(e), as being anticipated by Iacovangelo '032. 11/29/05 Office Action, page 4, paragraph no. 7. Applicants respectfully traverse this rejection.

Iacovangelo '032, titled "Adhesion Layer for Metal Oxide UV Filters", generally describes an adhesion promoting layer formed between a transparent substrate and a

metal oxide layer to prevent the metal oxide layer from delaminating from the substrate. Iacovangelo '032 abstract. Preferably, the substrate is a transparent polycarbonate, the adhesion promoting layer is a thin, transparent Al or Ag layer, and the metal oxide layer is ZnO, AZO or IZO UV radiation absorption layer. *Id.* The layers are preferably deposited by arc plasma deposition or by sputtering. *Id.* The claims of Iacovangelo '032 are discussed above. Other relevant sections of Iacovangelo '032 include Figures 3A-3B, and the accompanying discussion at column 6, lines 13-66. These passages describe various layers that may comprise “a plasma polymerized organosilicon”, but, consistent with the claims of Iacovangelo '032, such layers cannot be above and in direct contact with the adhesion promoting metal layer because the UV absorbing metal oxide layer must be above and in direct contact with the adhesion promoting metal layer.

First, Applicants respectfully note that the 4/4/06 Office action reiterates a previously made rejection without addressing key arguments in Applicants' 1/30/06 Amendment. “Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicants' argument and answer the substance of it.” MPEP 707.07(f). Here, in both the reiteration of the rejection and in the Examiner's “Response to Arguments”, the Examiner focuses solely on compositional limitations and ignores the positional limitations that distinguish Applicants' claims from the reference. Only by ignoring the positional limitations of the reference and present claims can the Examiner improperly conclude that the reference anticipates the rejected claims. *See, e.g.,* 4/4/06 Office Action, page 7, last full paragraph and page 8, first full paragraph. Applicants therefore have no choice but to reiterate their arguments in the hope that the Examiner will fully consider and respond to them.

Applicants respectfully assert that their claim 1 is patentable over Iacovangelo '032 because Iacovangelo '032 does not teach or suggest Applicants' claim 1 protective layer. Anticipation requires that all of the elements of the claim be found within a single prior art reference. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). As noted above, Applicants' claim 1 requires that the protective layer comprises “the plasma decomposition product of an oxidant and a reactant gas selected from silanes, disilanes, and organosilicon compounds” and be on top

of and in direct contact with the reflective metal layer. Iacovangelo '032 does not teach such a protective layer. In particular, the layers of Iacovangelo '032 that may comprise “a plasma polymerized organosilicon” cannot be on top of and in direct contact with the reflective metal layer, because that position is necessarily occupied by the UV absorbing metal oxide layer. Iacovangelo '032 thus fails to teach a layer satisfying both the compositional and positional limitations of Applicants' claim 1 protective layer. Iacovangelo '032 therefore cannot anticipate Applicants' claim 1. Given that claims 7, 8, 10, 11, 16, 17, 19, 21, and 22 each include or further limit all the limitations of claim 1, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1, 7, 8, 10, 11, 16, 17, 19, 21, and 22 under 35 U.S.C. § 102(e) over Iacovangelo '032.

Claim Rejection Under 35 U.S.C. § 102(b) Over Iacovangelo '694

Claims 1, 7, 8, 10, 11, 16, 17, 19, 21, and 22 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 6,261,694 to Iacovangelo (“Iacovangelo '694”). 4/4/06 Office Action, page 5, paragraph no. 11. Applicants respectfully traverse this rejection.

Iacovangelo '694 generally describes an infrared radiation reflecting and ultraviolet radiation absorbing coating formed over a polymeric substrate. Iacovangelo '694 abstract. The examiner has called attention, inter alia, to Figure 3A-D. Figure 3D includes three different layers that may comprise a “plasma polymerized organosilicon”. These layers are the “interlayer 6”, the “interlayer 7”, and the “abrasion resistant layer 5”. When a metallic “adhesion promoting layer 8” is present, it is “between the substrate 1 and the UV absorbing layer 2 as shown in FIG. 3F” or “directly below UV absorbing layer 2 in structures shown in FIGS. 3A-3E”. Iacovangelo '694, column 7, lines 41-52. Note that the “UV absorbing layer 2” comprises zinc oxide (ZnO), aluminum zinc oxide (AZO), or indium zinc oxide (IZO). Iacovangelo '694, column 2, lines 15-22. In no instance is a layer comprising a “plasma polymerized organosilicon” on top of and in direct contact with the metallic “adhesion promoting layer 8”.

Again, in both the reiteration of the rejection and in the Examiner's "Response to Arguments", the Examiner focuses solely on compositional limitations and ignores the positional limitations that distinguish Applicants' claims from the reference. Only by ignoring the positional limitations of the reference and present claims can the Examiner improperly conclude that the reference anticipates the rejected claims. *See, e.g.*, 4/4/06 Office Action, page 7, last full paragraph and page 8, first full paragraph. Applicants therefore have no choice but to reiterate their arguments in the hope that the Examiner will fully consider and respond to them.

Applicants respectfully assert that their claim 1 is not anticipated by Iacovangelo '694 because Iacovangelo '694 does not teach Applicants' claim 1 protective layer. As noted above, Applicants' claim 1 requires that the protective layer comprises "the plasma decomposition product of an oxidant and a reactant gas selected from silanes, disilanes, and organosilicon compounds" and be on top of and in direct contact with the reflective metal layer. Iacovangelo '694 does not teach such a protective layer. In the structures of Iacovangelo '694 that may include a metal layer ("adhesion promoting layer 8") and one or more layers comprising a "plasma polymerized organosilicon", the layers comprising a "plasma polymerized organosilicon" are never on top of and in direct contact with the metal layer. Iacovangelo '694 therefore fails to teach a layer satisfying both the compositional and positional limitations of Applicants' claim 1 protective layer.

Since claims 7, 8, 10, 11, 16, 17, 19, 21, and 22 each include or further limit all the limitations of claim 1, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1, 7, 8, 10, 11, 16, 17, 19, 21, and 22 under 35 U.S.C. § 102(b) over Iacovangelo '694.

Claim Rejection Under 35 U.S.C. § 103(a) Over Iacovangelo '694

Claims 4, 5, 15, and 18 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Iacovangelo '694. 11/29/05 Office Action, page 6, paragraph no. 10. Applicants respectfully traverse this rejection.

Yet again, in both the reiteration of the rejection and in the Examiner's "Response to Arguments", the Examiner focuses solely on compositional limitations and ignores the positional limitations that distinguish Applicants' claims from the reference. Applicants therefore have no choice but to reiterate their arguments in the hope that the Examiner will carefully consider and respond to them.

Applicants respectfully assert that their claim 1 is patentable over Iacovangelo '694 because Iacovangelo '694 does not teach or suggest Applicants' claim 1 protective layer. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all limitations of the claim be taught or suggested by the prior art. *See, e.g.*, MPEP 2143.03; *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974). As noted above, Applicants' claim 1 requires that the protective layer comprises "the plasma decomposition product of an oxidant and a reactant gas selected from silanes, disilanes, and organosilicon compounds" and be on top of and in direct contact with the reflective metal layer. Iacovangelo '694 does not teach or suggest such a protective layer. In the structures of Iacovangelo '694 that may include a metal layer ("adhesion promoting layer 8") and one or more layers comprising a "plasma polymerized organosilicon", the layers comprising a "plasma polymerized organosilicon" are never on top of and in direct contact with the metal layer. So, Iacovangelo '694 does not teach or suggest a layer that satisfies the compositional and positional limitations of Applicants' claim 1 protective layer.

Furthermore, there would be no motivation for one skilled in the art to modify the Iacovangelo '694 layer order to obtain a layer that satisfies the compositional and positional limitations of Applicants' claim 1 protective layer. The fact that a prior art reference can be modified does not make such a modification obvious. *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). And an examiner's proposed modification may actually be discouraged by a reference if that proposed modification interferes with intended function of the reference invention. *Id.* Note that the purpose of metallic "adhesion promoting layer 8" in Iacovangelo '694 is to promote adhesion of the

ZnO/AZO/IZO “UV absorbing layer 2” to the substrate. *See, e.g.*, Iacovangelo ‘694, col. 3, lines 43-53. In other words, for the metallic adhesion promoting layer 8 to carry out its intended function, it must be directly below and in contact with a UV absorbing layer comprising ZnO or AZO or IZO. So, rearranging the layer order of Iacovangelo ‘694 to place a plasma-polymerized organosilicon layer over and in direct contact with a metallic “adhesion promoting layer 8” would defeat the intended function of the metallic adhesion promoting layer. Iacovangelo ‘694 would therefore discourage one skilled in the art from any proposed modification that places a plasma-polymerized organosilicon layer over and in direct contact with a metallic “adhesion promoting layer 8”.

To summarize, Iacovangelo ‘694 fails to teach or suggest a layer satisfying both the compositional and positional limitations of Applicants’ claim 1 protective layer, and one skilled in the art would be discouraged from rearranging the Iacovangelo ‘694 layer order to create such a layer. Iacovangelo ‘694 thus cannot support a prima facie case of obviousness against Applicants’ claim 1, and claim 1 is therefore patentable over Iacovangelo ‘694.

Given that claims 4, 5, 15, and 18 each depend ultimately from and further limit claim 1, they, too, are patentable over Iacovangelo ‘694. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 4, 5, 15, and 18 under 35 U.S.C. § 103(a) over Iacovangelo ‘694.

Summary

Whether a rejection is based on obviousness or anticipation, it must account for all limitations of the rejected claims. Applicants’ claims include both compositional and positional limitations for each layer. To the extent that the cited references teach layers having compositions that overlap those of Applicants’ claimed layers, the reference layers are not in the order required for Applicants’ layers (e.g., the anticipation rejection over Iacovangelo ‘032, and the anticipation and obviousness rejections over Iacovangelo ‘694). And, to the extent that the cited references teach layers meeting the positional limitations of Applicants’ claims, those layers do not meet the compositional limitations of Applicants’ claims (e.g., the obviousness type double patenting rejection over


Iacovangelo '032). The references thus fail to teach structures having layers satisfying both the compositional and positional limitations of the layers recited in Applicants' claims. Applicants' claims are therefore patentable over the cited references.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-3619 maintained by Assignee.

Respectfully submitted,

CANTOR COLBURN LLP
Applicants' Attorneys

By: 
J. Michael Buchanan
Registration No. 44,571

Date: May 9, 2006
Customer No.: 23413
Telephone: (860) 286-2929